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# Staff and student perspectives on web based lecture technologies: Insights into the great divide



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Web-based lecture technologies (WBLT) have been introduced by some Australian Universities in recognition that many students need flexible learning choices during their studies. This paper reports on some of the findings of a research project, "the impact of WBLT on current and future practice in learning and teaching". The research was conducted across four Australian universities, with data obtained from surveys and in-depth interviews with both staff and students who had used WBLT.

While student perceptions about WBLT have been largely positive, staff opinions are varied. Many lecturers see the potential of WBLT as a study tool and recognise students' need for flexibility. However, staff are concerned that WBLT are exacerbating a trend toward declining lecture attendance, which they are linking to a drop in academic performance. While some lecturers indicate they have made changes to their lecturing in response to the technologies, there is little evidence of changes to the curriculum to effectively utilise these technologies.

Keywords: web-based lecture technologies, Lectoria, iletecture, student attendance trends

## Introduction

Web-based lecture technologies (WBLT) are systems which digitally record face-to-face lectures for delivery in streaming media formats for access by students on demand (Fardon, 2003). Lectoria (previously known as iLecture) is an example of this type of technology which is currently used at 14 universities in Australia (Lectoria, 2007). Web-based lecture technologies are gaining popularity as universities recognise the advantages of offering more flexible access to resources and learning options for students in increasingly globalised and competitive markets.

Many students have been quick to adopt the technologies, due to the convenience and flexibility offered by anytime, anywhere access (Fardon, 2003). Anecdotal feedback from lecturers on the other hand indicates a mixed response. While some applaud the flexibility and access to otherwise missed material that WBLT offers, others have concerns about the technology, linking its use to falling lecture attendance and poor learning experiences. We know that the introduction of new technologies is accompanied by changes to the way students learn and teachers teach. This is happening with the introduction of WBLT. To ensure that the choices provided to students have a positive impact on learning, we need to understand the nature of these changes and what they mean for the design of curricula, in particular the role of lectures and the practice of lecturing.

To explore the impact of WBLT on teaching and learning from both staff and students' perspectives, a team of researchers from four Australian Universities has embarked on a project, funded by the Carrick Institute for Learning and Teaching in Higher Education. Three of the participating universities use Lectoria and the fourth makes use of a combination of streaming video/audio and media files to deliver lecture materials across the university. More details about the project are available on the project web site at: <http://www.cpd.mq.edu.au/teaching/wblt/overview.htm>.

This paper reports on findings which relate to student and staff use of WBLT and their perceptions about the technologies' impact on student learning.

In particular, themes to be explored include:

- The disconnect between staff and student perceptions about the use of WBLT in different contexts;
- Issues emerging from the use of the technologies, for example perceived changes in lecture attendance and student engagement;
- Staff perceptions about how to address these issues.

Earlier findings relating to the student experience have been reported elsewhere (Gosper et. al. 2007; McNeill et. al., 2007) and are also available on the project web site.

## Background

The changing profile of higher education students is well documented in the literature. Universities can no longer afford to limit enrolment to the elite – ‘the most intelligent or privileged 10-15% of the population, who had the interest, motivation and ability to learn largely on their own’ (Phillips, 2005). They are now required to meet the needs of an increasingly diverse cohort of learners. A relatively large proportion of Australian university students are mature-aged, with only 27.2% aged under 20 (Australian Vice-Chancellors' Committee, 2001: 39) and many combine their studies with work or family commitments. A recent report on student finances (Australian Vice-Chancellors' Committee, 2007) indicates that 71% of Australian university students undertake paid employment during semester, working an average of 15 hours per week. Students are demanding more flexibility to enable them to study while managing their work and family commitments (McInnis & Hartley, 2002). A recent study by Anderson (2006) reported that 78% of students found that work impacted on their study, and 40% felt that their university did not cater well for students in paid employment.

The introduction of WBLT has been one response to the need for flexibility of access. It provides students with choices in how they access lecture content and how they use that content to support their learning. While WBLT have obvious benefits in the flexibility they offer, students are also generally positive about the impact these technologies have on their learning. In McElroy & Blount's (2006) survey of 411 students on their usage of WBLT, more than 75% of students agreed that iLecture enhanced the course when compared to other subjects that did not include iLecture.

Soong, Chan, Cheers and Hu (2006) reported on a similar study conducted in Singapore, but with video-recorded lectures. In a survey of 1160 students, they found that 94.9% agreed that the video-recorded lectures were useful in relation to their studies. The most popular reasons for using video recorded lectures were for reviewing difficult parts of the lecture and for exam preparation.

There is also evidence that WBLT are used by students as a study tool to complement face-to-face lectures (Signor, 2003; Williams & Fardon, 2007). Students have reported using WBLT to support their learning by checking over notes, by reviewing difficult concepts, by revising for exams and by listening to missed lectures (McElroy & Blount, 2006; McNeill et. al., 2007).

Despite the positive reception by students, the response by academic staff has been less consistent. Some academics have accepted the need for change in the current climate of higher education and have adopted technologies such as WBLT as tools which can be used to enhance student learning (Williams and Fardon, 2007). Shannon (2006) reported that most of her students found the technology beneficial to their learning and that the overall grades of the class were not different from previous semesters where podcasts of lectures were not available. Other academics criticise WBLT as reinforcing lecturing as a transmission model of teaching (Donnan, Kiley, & McCormack, 2004) and some have linked them to decreasing attendance in lectures (Williams and Fardon, 2007). Massingham and Herrington (2006) reported a relationship between students' participation in class and their final results, suggesting that students who do not attend lectures also miss out on opportunities to participate, which could result in surface engagement with the content.

Despite the rhetoric surrounding WBLT and dropped attendance, the literature consistently shows that the availability of WBLT is only a minor factor in contributing to students' low attendance (Maag, 2006; Massingham & Herrington, 2006). Among the other factors are students' changing lifestyles, their attitudes to learning and their perceptions of the teaching they encounter when they do attend.

## Methodology

This paper reports on one aspect, that relating to the differing perspectives of staff and students, of a larger research study exploring how web-based lecture technologies can best be used to support learning and teaching. The study employed a mixed methods approach (Creswell, 2003), drawing on quantitative

and qualitative data obtained from both students and staff who used WBLT. Three main data collection activities were undertaken during the study: a student survey, a staff survey, and in-depth interviews with both students and staff. The student and staff surveys were designed based on previous research (McElroy & Blount, 2006) and findings from initial focus groups with staff, as well as institutional surveys. The surveys conducted at the participating universities aimed to provide a comprehensive overview of experiences of participants using web-based lecture technologies to enhance learning.

The student survey collected data on four specific areas in relation to the students and their use of WBLT. The first part of the survey asked students about their experience of WBLT in the context of a specific subject. In the second part, students were given the Revised Two-factor Study Process Questionnaire (Biggs, 2001). The third part of the questionnaire asked students about their overall experience of WBLT in the university. In the final part, students' demographic information was collected. In total, 13278 students were invited across the four universities and 815 responded. The exact response rate of the survey cannot be determined as, although all students enrolled in those subjects were offered the technology, it is impossible to know the exact number of students in those units who actually used WBLT. Nonetheless, the sample size was large enough for statistically valid conclusions to be made.

The staff survey was designed to correspond where possible with the student survey, so that results could be compared. The survey collected data on three specific areas in relation to lecturers and their use of WBLT: 1) the teaching and curriculum context, including details of delivery mode and discipline area; 2) the reasons for using WBLT and the strategies adopted; and 3) perceptions of the effect of WBLT on lecture attendance and communication patterns between themselves and their students. In addition, Trigwell & Prosser's (2004) *Approaches to Teaching Inventory* was included to provide insight into lecturers' perspectives of their teaching philosophy. A total of 676 academic teaching staff who had made use of WBLT were invited to participate in the survey and 155 (22.9%) responded from across the four universities.

The interviews of staff and students aimed to provide a contextualised view of the issues that arose from the surveys. Participants self nominated and in total, 6 lecturers and 10 students were interviewed using a semi-structured instrument derived from the survey questions.

The statistical package SPSS was used to undertake analysis of the quantitative data and the general descriptive data were supplemented by correlational, factorial, variance and regression analyses. The Software package nVIVO was used to analyse the qualitative data. Further details of the methodology are available on the project website.

## Results

The following sections present the results of the staff survey, supplemented by interview data; and compare them with previously published student data. Key themes which arose from the research are explored: overall perceptions, reasons for using WBLT, lecture attendance trends, the lecture experience, the teaching context, and curriculum design issues.

### Overall perceptions of WBLT

A key issue for investigation was staff and student experiences of WBLT and the impact of the technologies on learning and teaching. The staff survey asked about perceptions of the use of WBLT for teaching and learning. The results are shown in Table 1, together with the student results for the same question. There was a mixed response about staff experiences, with 54% of respondents finding use of WBLT to be generally positive, while another 26% found the experience to be negative. A higher percentage of students (76%) were positive about WBLT, with only 11% negative. The difference between the staff and student responses on this item was significant at the  $p < 0.05$  level.

**Table 1: Staff and student responses to the statement "overall, my experience of using WBLT for teaching and learning has been positive". Percentage responses on a five point Likert scale**

Response	Staff (N=136)	Student (N=700)
Almost always	29.4%	44.0%
Frequently	24.3%	32.2%
About half of the time	18.4%	12.7%
Sometimes	14.7%	7.6%
Rarely or almost never	11.8%	3.4%

Students and staff had divergent views on the ability of WBLT to support learning and achieve better results. As shown in Table 2, 66.7% of students compared with 30.2% of staff agreed that WBLT helped them achieve better results. In addition, 79.9% of students compared with 48.9% of staff agreed that WBLT made it easier for students to learn. There was a significant difference ( $p < 0.05$ ) between the perceptions of the staff and students on these two dimensions.

**Table 2: Staff and student perceptions about the ability of WBLT to assist students to achieve better results and learn better. Percentage responses on a five point Likert scale.**

Response	Do you think using WBLT has helped your students (you) to achieve better results?			Do you think using WBLT makes it easier for your students (you) to learn?		
	Staff (N = 139)		Student (N = 746)	Staff (N = 139)		Student (N = 746)
Yes – significantly	7.9%		35.1%	12.2%		47.1%
Yes – moderately	22.3%		31.6%	36.7%		32.8%
Not sure if any change	54.7%		23.3%	38.1%		13.4%
No – didn't help	9.4%		8.6%	7.2%		5.6%
No – detrimental	5.8%		1.3%	5.8%		1.1%

It is noteworthy that there were relatively high neutral scores by staff for both questions, perhaps because, as expressed in the following quote, staff have little evidence available to make judgements about these questions:

I have no real indication of whether students learn just as well using [WBLT]. I believe this may be true for some, but have no real evidence.

The staff surveyed identified a number of issues around the use of WBLT which are explored in the next sections.

### Reasons for using WBLT

The staff survey asked respondents to select from a list of statements their reasons for using WBLT. The results are shown in Table 3. A high proportion of respondents wanted to support students who could not attend and to provide another learning tool to students. This is consistent with the student survey results (McNeill et. al., 2007), where most students appreciated WBLT as a back up when they could not attend, and as a study tool. Students reported that WBLT enabled them to revise for exams and review materials and announcements made in the lecture.

Approximately half the staff respondents wanted to support students with disabilities and those from NESB backgrounds. Table 3 shows that the other responses were only marginally popular with staff.

**Table 3: Ways that staff used WBLT. Note that multiple responses were possible**

I use WBLT:	Count	% (N=139)
to support students who can't come to class	127	91.4%
to provide another tool to help students learn	100	71.9%
to support known or unknown students with disabilities	76	54.7%
to support students from non-English speaking backgrounds (NESB)	73	52.5%
because my department required me to use it	27	19.4%
because my students pressured me to use it	18	12.9%
to help students cope with my delivery style or accent	15	10.8%
so I don't have to repeat lectures	13	9.4%
because students learn just as well using WBLT compared to face-to-face lectures.	5	3.6%

The lowest rated item in Table 3 was that students could learn just as well using WBLT as face-to-face. Only five staff (3.6%) agreed with this statement, however students had a very different view. This was the second most popular student response, with 68.3% of the 331 student respondents agreeing (McNeill et. al., 2007).

The most common qualitative responses related to the first two items in Table 3. A number of comments expanded on use of WBLT to provide another tool for students to learn, e.g. allowing students to revise for exams, to revise complex ideas and to cater for different learning styles:

It allows students to review and add to their lecture notes points that they may have missed. It allows auditory learners to revise in a suitable way.

External (distance) students are recognised by staff as a distinct cohort who fall into the category of not being able to come to class. Of the 155 respondents to the staff survey, 84 taught a mixture of internal and external classes. The use of WBLT was seen as beneficial to these students particularly for:

- providing up-to-date information;
- increasing a sense of belonging; and
- providing opportunities for interactions between staff and other students.

Whilst there is consistent support for WBLT in the choice they offer external students, there is concern that WBLT could be detrimental to internal students, as typified by this comment,

For internals I think it can help them to justify not coming to lectures. They think, "it's OK not to go, I'll listen to the iLecture later". I fear later never comes or comes too late and they cram for assessment. Externals, however, brilliant!

The data suggests that lecturers perceive differences in the benefits for internals and externals. It seems they recognise the benefits for external and part-time students, but are not sure of the benefits to on-campus students, and are concerned about lecture attendance trends.

### Lecture Attendance Trends

Concerns about the impact of WBLT on student lecture attendance were identified prior to the commencement of this project and investigated in both students and staff. Table 3 indicated that many staff used WBLT *to support students who can't come to class* and those *with timetable clashes*. Many lecturers seem to understand the need of flexibility for their students, but were, nevertheless, concerned about decreases in lecture attendance.

The staff survey asked for agreement with the statement *Student attendance in my lecture has decreased as a result of using WBLT*. Just over half (55%) of the respondents felt that WBLT had resulted in decreased lecture attendance. However, 24% reported no difference, and 9% strongly disagreed that WBLT has impacted on lecture attendance. An explanation of these figures is problematic, with various factors impacting on them, including the changing student demographics, and the lecture attendance patterns of students prior to the introduction of WBLT. Subsequent sections attempt to unpack some of these issues.

While it seems clear that student attendance is low and arguably decreasing, it is not clear that WBLT are the cause of this. It is well recognised that students have increasing employment and lifestyle pressures which make it harder for them to engage as deeply in the university experience as those from previous decades (Maag, 2006; Massingham & Herrington, 2006). Earlier work has identified various reasons why students are unable to attend lectures, including timetable clashes, work commitments and disability, medical conditions or illness (Williams and Fardon, 2007).

Some of the qualitative responses recognised that decreases in lecture attendance had occurred prior to the introduction of WBLT. Others saw WBLT as a backup mechanism for students who were going to miss classes anyway, for example,

There has always been reasonable student drop-out in attendance at lectures during the semester. The advantage of [WBLT] is that you can be reasonably confident that most students will listen to the lectures at some time.

Among the various reasons given for decreases in attendance, three comments pointed directly at WBLT as the cause. Others referred to the timing of the lecture (impending assessments or the time of the day) and competing commitments for students (McInnis & Hartley, 2002). However, a common perception was that WBLT encouraged students to give preference to other commitments because a backup was available, as typified by this comment:

Students seem slightly more willing to skip class when other pressures come up (eg, work) as they know they can catch up via the iLecture recording.

One free-form question asked for views about what students would miss if they did not attend face-to-face lectures. Many respondents were concerned about students missing the group experience of being in a lecture where they can get to know and become intellectually engaged with other students and the lecturer. They also commented on non-verbal communication and the ability to ask questions, relating to the perceived one-way nature of web-based lecture technologies. The opportunity for students to ask questions *on the fly* was seen to be missed if students do not attend face-to-face lectures. It is not clear whether lecturers saw students asking questions in the lecture theatre as being a significantly better learning experience than if they ask them online, but many responses included some remarks about students missing the opportunity to ask questions.

The opportunity to ask questions and engage in discussion. In other words, I think they come to regard lectures as information transfer rather than as an intellectual engagement with ideas.

Some observed that if students do not attend lectures or listen to them regularly, they do not participate as much in other components of the course:

Students don't turn up to lectures (or listen to them) and rapidly fall behind. As they have not had face to face interaction in the lectures, they tend to be more withdrawing in the prac classes and/or are reluctant to ask questions.

Another interaction issue raised by lecturers as a result of dropping attendance is that they are unable to gauge students' understanding, for example,

I have not changed the way I communicate with the students I see, but feel that I do not see the same proportion of them as previously and have no way of monitoring how that has effected them. It has certainly influenced my confidence that I am meeting my students' needs, and raised great uncertainty as to how to address that....

Some lecturers have begun feeling that their good intentions of providing WBLT for students may be abused. The following quote summarises the types of concerns and struggles that have come through in several responses:

They deliberately organise other commitments knowing that their university commitments can be fulfilled by listening to i-lecture. I am lucky to get 40% attendance at class...What is worse, many of them now work close to full time so the time and energy they have available is limited. There is a clear trend of students just doing what they need to pass the unit, and not really interested in engaging with the subject or me as teacher. I-lecture encourages this passive approach to learning, and also fuels a perception that these students can 'do it all'... As such I have decided I will no longer be i-lecturing my elective subjects.

Boycotting WBLT was one strategy identified for addressing falling lecture attendance. Others were to make attendance compulsory or warn students of the disadvantages of not attending. One interviewee had recently implemented a roll to record student attendance and assigned participation marks for attending lectures.

Focusing on attendance and developing compliance oriented strategies is one response, but it does not address the fundamental issue of why should students come to lectures if they perceive they learn as well from the technology. This begs the question of what is the role of lectures? If lecture attendance is important to the delivery of the curriculum then what strategies can be put in place to enhance the lecture experience, and are there contexts where WBLT may not be appropriate?

## The lecture experience

The staff survey asked people to respond to several statements related to the role of lectures in their teaching. Two responses were requested (see Table 4): firstly about how they perceived lectures in their teaching and the secondly whether the use of WBLT changed (enhanced or reduced) their ability to do these things in lectures.

**Table 4. Role of lectures in teaching and WBLT's impact on this.**

Two five point Likert scales were used; 1 = strongly agree to 5 = strongly disagree and 1 = strongly enhanced to 5 = strongly reduced. Mean scores are listed, with percentage of 'agree' responses in parentheses.

<b>Role of lecture in teaching (N=141)</b>	<b>I use the lecture to</b>	<b>WBLT has enhanced my ability to</b>
inspire and motivate my students	1.36 (95.7%)	3.11 (29.8%)
build a conceptual framework with students	1.48 (94.3%)	2.79 (34.0%)
establish a connection between me and my students	1.50 (93.6%)	3.36 (27.0%)
make use of visual aids, video, or other props to explain the content	1.56 (92.2%)	3.24 (29.1%)
provide a structured experience of the unit content	1.76 (89.4%)	2.64 (43.3%)
make announcements to keep students up to date with events and course administration	1.81 (80.9%)	2.52 (46.8%)
impart a lot of information related to the subject	1.91 (82.3%)	2.55 (47.5%)
gauge students' understandings and then respond accordingly on-the-fly	2.24 (68.8%)	3.51 (12.8%)
demonstrate processes and/or procedures	2.26 (67.4%)	3.04 (20.6%)
provide group feedback to students	2.61 (53.9%)	2.99 (20.6%)
provide a routine for my students	2.81 (38.3%)	3.17 (15.6%)

There was a high level of agreement with the first seven items in Table 4 relating to the role of lectures: to inspire and motivate, build conceptual framework, establish connection, make use of visual aids and unit structure. However, when asked whether WBLT had enhanced or reduced the ability to do these things in lectures, the results were neutral (means between 2.52 and 3.51 on the five point scale). The percentage of respondents in agreement indicates that few staff felt that WBLT enhanced the student learning experience, but a similarly small number of people felt that it was detrimental.

A further question asked how WBLT might affect lecturing styles. Multiple responses were possible to a range of options. Approximately half (70) of the 139 responses indicated that they had become more aware of their spontaneous comments in lectures. In addition, 60 and 51 people, respectively, reported no significant change to lecturing style or what was done in lectures. Approximately a third have adjusted their activities in lectures to cater for students who aren't present, but a third also reported reducing their movement in the lecture theatre and reducing the use of multimedia content due to copyright restrictions. Thirty-six reported listening to their lectures to improve their performance. While some lecturers attempted to make lectures more interactive, thus making it better for those who attend and less meaningful to those who rely on listening, 12 said they had adopted a more didactic style of lecturing.

Qualitative comments expanded on some of these issues. The most common changes cited by respondents were to explain themselves more and to repeat students' questions when they are being recorded, for the benefit of non-attending students. Some lecturers did not mind doing so whilst others found that it "*tends to kill the snappiness of lecturing a bit*". Reduced attendance at lectures was also reported as reducing the dynamism of Lectures.

In the open-ended comments, some respondents explained that they chose not to change their lecturing style or what they did in lectures because they see that internal students have the responsibility to attend lectures. They also felt that adjusting for non-attending students would degrade the lecture experience for internal students. As examples:

As 90% of my students are registered as being able to come to lectures, I continue to lecture in the style that is best suited for face-to-face attendance. The fact that they progressively turn solely to iLecture for the notes during the semester, I think is a shame, but their choice.



On the other hand, there is evidence of a lecturer taking advantage of a combination of technologies to bring together the previously separate cohorts of external and on-campus students in his unit. This lecturer explicitly addressed external students in his lectures, and found that external students would be discussing his lectures in the online forum one hour after he had delivered it. In fact, the external students and internal students were able to participate in the online discussion as a single community through the timely delivery of lectures and the support of a discussion forum,

I think [the] internal/ external divide is much less than it used to be.

### **Contextual issues**

The staff survey identified various contexts where WBLT were considered to be inappropriate. Some respondents answered that they would use WBLT for all classes. However, many respondents felt that WBLT were not appropriate for interactive and small classes, which required students to engage in discussion. Some lecturers expressed concern that offering the option of simply listening to them sends a wrong message to students:

A class where discussion is a core activity does not record well on WBLT.

I wouldn't use it in seminar classes because students seem to assume if there is iletecture, that means passive engagement with the unit is ok

The use of WBLT was also questioned in learning situations where students need to present or learn embodied skills, such as presentation or practical skills:

[For] some of the hands on practical sessions I cannot use iletecture because we take the students outside and engage in activities that would be meaningless to listen to...

The confidentiality of students' comments in discussions was also raised as a concern for some lecturers when considering the use of WBLT, especially in areas where the content is sensitive, e.g. victimisation. In one case, the lecturer required the students to be present to offer immediate counselling if students display signs of distress. This was not possible when the students are sitting at home listening to the lecture in isolation.

Due to copyright restrictions, some lecturers indicated they would not use WBLT in classes where copyrighted multimedia material is essential to students' understanding, for example, films.

The four participating universities offer different types of WBLT; 77.4% of staff respondents were from the two universities (Murdoch and Macquarie) offering only audio recordings, with the option of downloading visuals. At Flinders and Newcastle, full audio and video capture is available. Correspondingly, some Macquarie and Murdoch lecturers indicated they would not use WBLT in lectures which involve demonstration of procedures cannot be adequately captured, for example mathematics.

In summary, staff understood that WBLT were not appropriate in all cases. Some staff also indicated that the use of WBLT will impact on the design of the curriculum, and the role of lectures and lecturing styles need to be reviewed prior to the introduction of WBLT to maximise learning opportunities for students.

### **Adapting the curriculum**

Decisions about whether and how to use WBLT will depend on a range of factors including discipline, aims and outcomes, the nature of the content, teaching methods and student profile. However, there is little evidence to suggest that the curriculum itself has been changed by the users of WBLT.

To explore this issue, respondents were asked whether they had changed the structure of their units (e.g. activities, assessment, feedback, use of online technologies) as a result of the introduction of WBLT. Seventy-five percent (75%) answered No to this question.

Although some lecturers realised that certain curriculum designs didn't suit the use of the technologies, the solution was identified as omitting WBLT rather than redesigning the curriculum. For example,

If we were to adopt it in our pregraduation "capstone" classes, we would have to rethink some of our pedagogy. These classes, designed to prepare students for their post-graduation options, currently incorporate live class presentations by students and interaction for which actual bodily presence is essential.

Of the 25% of the respondents who had restructured their unit, some had increased the emphasis on online communication and activities. These lecturers acknowledged that some students cannot regularly come on campus, and use online communications and activities to stay connected with them. One lecturer reported rethinking a new form of internal student who does not attend campus:

We are now pioneering off-campus tutorials for students who access lectures via videorecording. These students in principle may never need to visit campus, though they are still formally internal and not external students.

Some lecturers reported that they communicate with their students online more often, although it is difficult to tell whether this is due to WBLT or simply as a general trend of online education. They use emails and discussion boards for both internal and external students. Interactions and communication for external students have particularly been improved:

Contact with the external students is much improved, as most access the lecture soon after its actual delivery. Feedback and discussion of topics is much improved

Others found that students ask more questions, possibly indicating more engagement with the material:

Seem to get a few more requests for clarification - it seems to increase the ability of those students who listen to the recordings to reflect on the material

However, some staff indicated that improved interaction came at a cost to workload and equated flexibility for students with duplicated administration for lecturers:

... through WebCT, the communication has increased enormously through the bulletin board and via email communication in particular; which is positive from a pedagogical perspective and disastrous from a workload perspective!

Well, since some people may choose not to be there, I have had to use email for administrative things to make sure the message gets across properly.

Other lecturers have adopted formative assessment approaches to promote engagement with the curriculum.

... we have required that the students submit progress tasks, to attempt to make sure they actually are keeping up with the work in the unit.

In summary, some staff seem to be designing effective learning environments which meet the needs of their students, but they are a minority.

## Conclusion

Our previous work (Gosper et. al. 2007; McNeill et. al., 2007) has shown that students are largely positive about the effectiveness of WBLT in assisting their studies. Students both required and appreciated more flexible ways of studying. This paper has investigated staff perceptions about WBLT. Staff perceptions were significantly less positive about the overall experience of WBLT, and their ability to support student learning, although staff reported that they lacked evidence about this. Staff agreed with students that WBLT could support students who cannot attend lectures for a range of reasons. They also saw WBLT as a useful tool to engage external students in a richer learning environment.

Staff were concerned about falling lecture attendance, and the impact of WBLT on this. They were concerned that students were not engaging with their coursework, were delaying listening to lecture recordings and had reduced their opportunities for social learning in class. While our research to date has uncovered issues and concerns, future research is needed to explore their validity. This paper has explored strategies that staff have adopted to retain engagement with their students. These ranged from mechanisms to enforce attendance, to modification of lecturing styles, to (in a small number of cases) adapting the unit curriculum.

What is clear also from the findings is that, while many staff recognise the limitations of WBLT and are concerned about the impact these technologies have on learning, they have been addressing these issues by attempting to maintain the status quo, by re-emphasising the importance of lectures and the need for students to attend them, rather than restructuring the curriculum to best achieve desired learning outcomes in the context of the reality of most students' lives. Deeper thought is needed about the role of lectures to

meet the learning needs of students. Rather than focussing on the lecture, it may be more appropriate to consider the learning outcomes of students and how best to provide stimulating and engaging learning environments and experiences for students. Indeed we found that staff who have restructured their units to accommodate the changing needs of their students (for example, through increased use of online communication activities to replace physical attendance) have had more positive experiences with WBLT.

Further analysis of existing data will be carried out to investigate some of the unresolved issues reported here, for example more exploration of the discrepancies between staff and student perceptions about the benefits of WBLT. In addition, specific developmental and investigative case studies are being carried out to explore some of the results of this research in more detail.

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